
INSTALLATION RESTORATION PROGRAM

Final
DECISION DOCUMENT
UST SITE 130

117th Refueling Wing
Alabama Air National Guard
Birmingham Airport
Birmingham, Alabama

January 1997



19970915 125

DTIC QUALITY INSPECTED 3

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REPORT DOCUMENTATION PAGE

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1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATE COVERED	
	Jan 97		
4. TITLE AND SUBTITLE DECISION DOCUMENT, UST 130, 117TH REFUELING WING, Alabama Air National Guard, Birmingham Airport, Birmingham, Alabama		5. FUNDING NUMBERS	
6. AUTHOR(S) CH2M Hill, Inc.			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) CH2M Hill, Inc. Hazardous Waste Remedial Actions Program, Martin Marietta Energy Systems, Inc. Oak Ridge, TN 37840		8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) ANG/CEVR 3500 Fetchet Ave Andrews AFB MD 20762-5157		10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES			
12a. DISTRIBUTION/AVAILABILITY STATEMENT unlimited distribution			12b. DISTRIBUTION CODE
13. ABSTRACT (Maximum 200 Words) The Installation Restoration Program was initiated by the Air National Guard (ANG) to evaluate potential contamination to the environment caused by past practices at its installations. During the 1987 Preliminary Assessment (PA), ten abandoned underground storage tanks (USTs) were identified at nine sites. UST 130 was removed from the area south of Building 130 in January 1991. Remaining soil was above the Alabama Department of Environmental Management's (ADEM) corrective action limit of 100 ppm total petroleum hydrocarbon (TPH), but it is believed to be limited to soils immediately adjacent to the tank pits. The report documents no further action need be taken at this UST site.			
14. SUBJECT TERMS Installation Restoration Program, Air National Guard, USTs, Birmingham International Airport, Alabama, ADEM		15. NUMBER OF PAGES 17 pages	
		16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT General	18. SECURITY CLASSIFICATION OF THIS PAGE General	19. SECURITY CLASSIFICATION OF ABSTRACT General	20. LIMITATION OF ABSTRACT none

INSTALLATION RESTORATION PROGRAM

**DECISION DOCUMENT
SITE UST 130**

**117 AIR REFUELING WING
ALABAMA AIR NATIONAL GUARD
BIRMINGHAM AIRPORT
BIRMINGHAM, ALABAMA**

Submitted to:

**AIR NATIONAL GUARD READINESS CENTER
ANDREWS AIR FORCE BASE, MARYLAND**

Modified and Submitted by:

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**for the
U.S. DEPARTMENT OF ENERGY
UNDER CONTRACT NO. DE-AC05-84OR21400**

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[DTIC QUALITY INSPECTED 3]

JANUARY 1997

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ACRONYMS

AANG	Alabama Air National Guard
ADEM	Alabama Department of Environmental Management
ANG	Air National Guard
ANGRC	Air National Guard Readiness Center
DOD	Department of Defense
DOE	Department of Energy
HAZWRAP	Hazardous Waste Remedial Actions Program
IRP	Installation Restoration Program
NFAR	No Further Action Required
NGB	National Guard Bureau
PA/SI	Preliminary Assessment/Site Investigation
ppb	parts per billion
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SI	Site Investigation
TCLP	Toxicity Characteristic Leaching Procedure
TPH	Total Petroleum Hydrocarbon
UST	Underground Storage Tank

EXECUTIVE SUMMARY

As part of the Installation Restoration Program (IRP), the Air National Guard Readiness Center (ANGRC), previously known as the National Guard Bureau (NGB), and Alabama Air National Guard (AANG) requested field observation and sampling during the removal of Underground Storage Tank (UST) 130. The investigation was begun to determine the presence or absence of contamination and the risk to public health and environment, if any, associated with past operations at this site.

This document was prepared to review the available data, to evaluate alternative actions, to make recommendations concerning future actions, and to fulfill the requirements and objectives of the National Environmental Policy Act.

UST 130 was removed in January 1991. No soil staining or fuel odor were observed during trenching around the tank for soil sampling. The tank was observed to have one 1/8-inch-diameter hole on the north side of the west end. No other holes or corrosion were observed.

Results of laboratory analysis of samples collected from the soil next to the tank indicate that the remaining soil contains detectable levels of total petroleum hydrocarbon (TPH). Two laboratory samples indicated a level of TPH greater than the Alabama Department of Environmental Management's (ADEM's) criteria of 100 parts per million (ppm).

Upon review of the closure report; ADEM issued a letter (October, 1991) stating that it would not require further action at this site. Therefore, because it is impractical to remediate the contaminated soils, and the relatively low concentrations of contamination are not likely to travel far in the clayey soils, it is recommended that this site be removed from further IRP activities and that no further action is required.

1. INTRODUCTION

The objectives of the Decision Document are to present the history of Underground Storage Tank (UST) 130 at Birmingham's Alabama Air National Guard (AANG) facility, to discuss observations made while excavating the tank, to identify and evaluate control measures, and to present conclusions and decisions about the disposition of each UST site. Decisions are based on regulations set forth in the site investigation (SI) work plan dated November 1989.

Figure 1 shows the general location of the Birmingham AANG facility. Figure 2 shows the specific location of UST 130 on the base. Evaluations are based on criteria set forth in the Site Investigation Work Plan, Alabama Air National Guard (CH2M HILL, Inc., November 1989).

2. BACKGROUND

2.1 PROGRAM BACKGROUND

The Air National Guard Readiness Center (ANGRC), through the Air National Guard (ANG), initiated an Installation Restoration Program (IRP) in response to the policies of the Department of Defense (DOD). The IRP was developed as a phased program for identifying and addressing environmental contamination caused by past practices at ANG installations.

As a part of the IRP, the ANGRC entered into an interagency agreement with the Department of Energy (DOE), under which the DOE provided technical assistance for implementing this program. The Hazardous Waste Remedial Actions Program (HAZWRAP), as a DOE contractor, is responsible for managing this effort under the interagency agreement.

The IRP, along with other national hazardous waste cleanup programs, follows the terminology and procedures of the National Contingency Plan:

- PA/SI Preliminary Assessment/Site Investigation
- RI/FS Remedial Investigation/Feasibility Study
- RD/RA Remedial Design/Remedial Action

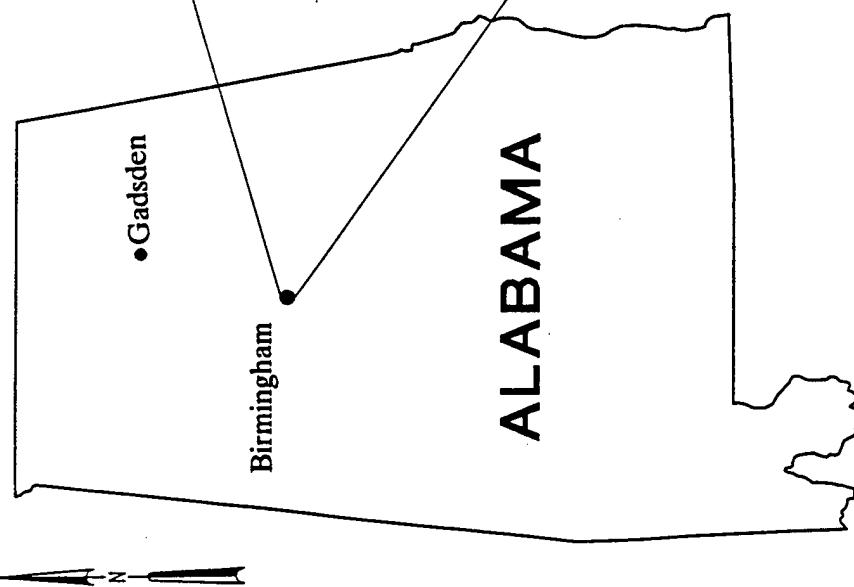
This Decision Document is written to provide the basis for the decision not to day further work. The UST was removed during the SI implemented through the IRP.

LOCATION MAP

1 MILE



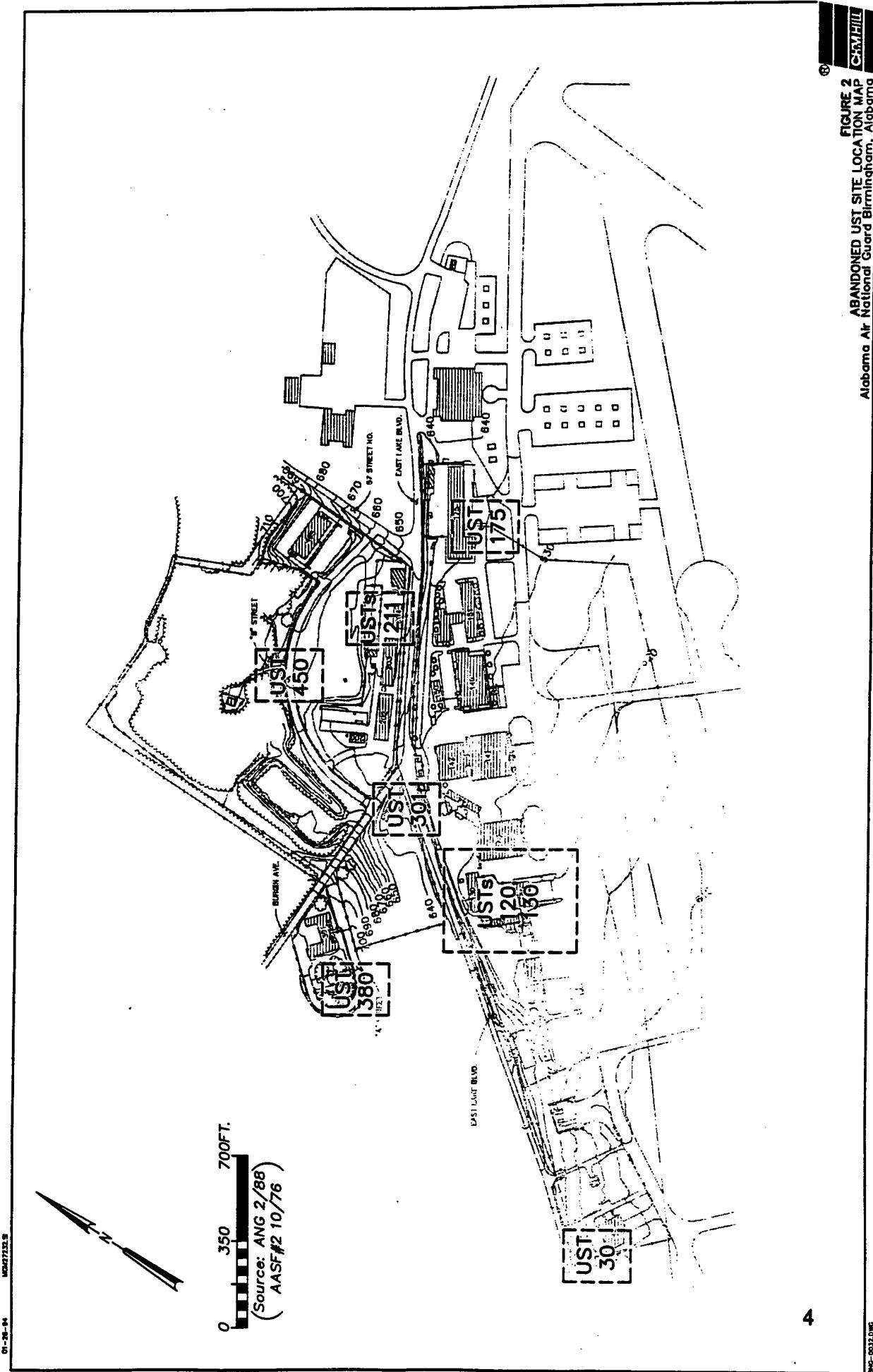
VICINITY MAP
N.T.S.



ALABAMA

Alabama Air National Guard Birmingham, Alabama

FIGURE 2
CHYHILL



2.2 SITE DESCRIPTION

The 117th Tactical Reconnaissance Wing is located next to and north of the Birmingham Municipal Airport, Birmingham, Alabama. This AANG installation has been active at its present location since 1938. Through the years, the base has had several missions, with past and present operations involving the use of USTs for containment of heating fuels, diesel fuels, and jet propulsion fuels.

UST 130 was a 4,100-gallon fuel storage tank adjacent to Building 130 at the Birmingham AANG facility. Tank age could not be determined from base records, but the estimated last use was in 1972. The tank was suspected to have contained diesel fuel and was removed in January 1991. Figure 3 presents the UST 130 site map.

2.3 ENVIRONMENTAL SETTING

2.3.1 Geology

The bedrock beneath the Base consists of the Ketona Dolomite and Knox Group. A mottled-colored cherty clay residuum, resulting from the dissolution of the bedrock, overlies dolomites of these units and averages 30 feet in thickness over the base. Some areas of the Base have visible outcrops of dolomite and chert boulders which are isolated in the clay residuum; chert float can be seen at the surface base-wide.

The residual cherty clays are generally homogeneous, although slight changes in the amount of chert, plasticity and stiffness are present. Dolomitic sand lenses are gravelly clays are present, generally occurring at the contact of clay and bedrock.

2.3.2 Hydrogeology

The uppermost aquifer at the Base is the Knox aquifer. The top of the aquifer is the saturated permeable interface between the residual clay and the bedrock. The clay materials above the bedrock are also generally saturated at shallow depths, 10 to 15 feet below land surface. These clays generally do not yield significant quantities of water.

The direction of groundwater flow in both the clay residuum and the Knox is to the south; a downward vertical component exists in the clay residuum. Data from slug testing of monitoring wells completed in the clay indicate an average hydraulic conductivity of 9.02E-4 ft/day. Because of the low permeabilities exhibited by the residual clays, lateral transport is inhibited.

2.3.3 Water Utilization

Drinking water in the Birmingham is provided by city/county utilities from surface water sources. The municipal water source nearest the Base is the Cahaba River, located approximately 20 miles to the east. Residences adjacent to the Base have been served by the municipal water system for about 60 years.

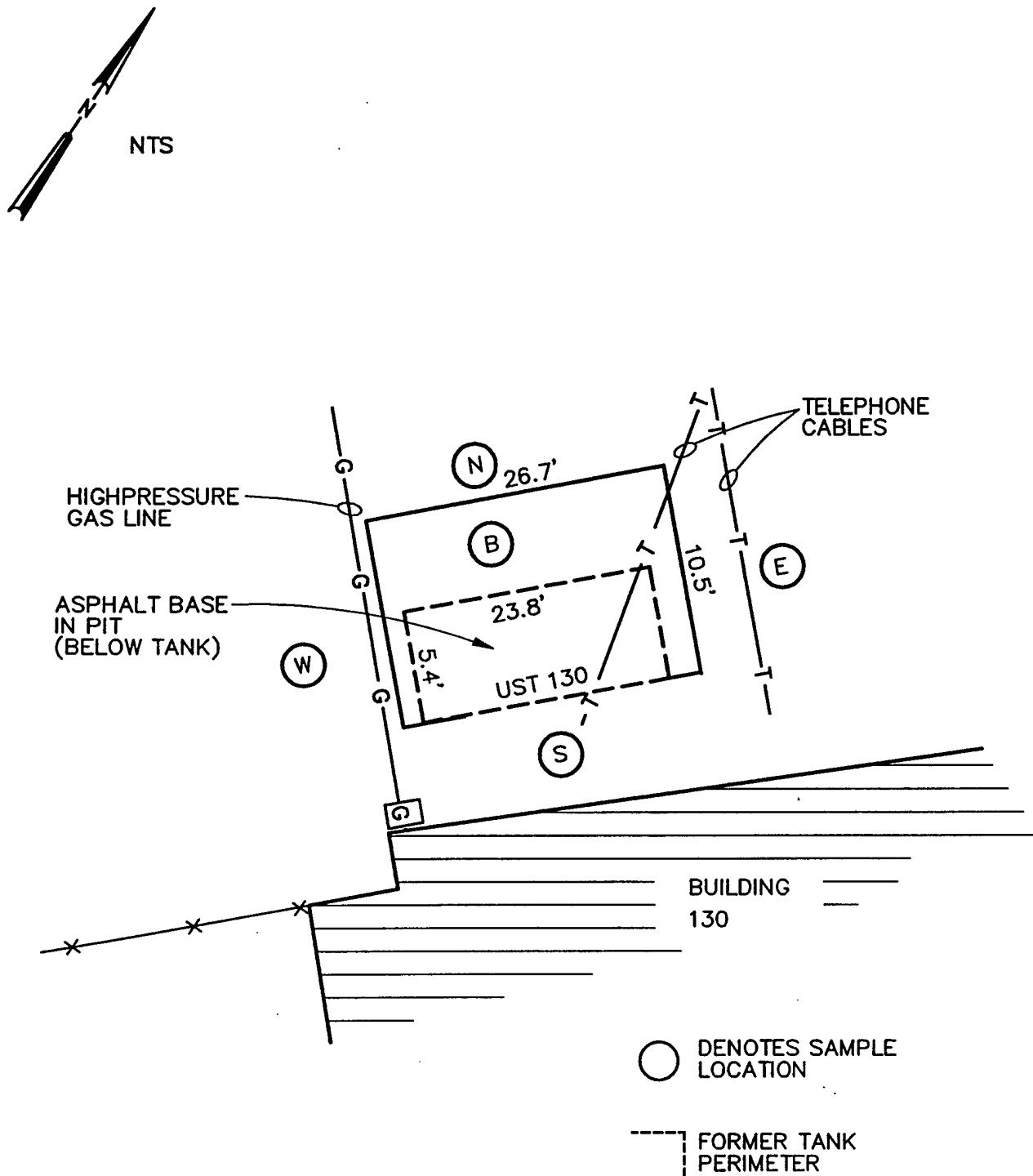
2.4 TANK REMOVAL OBSERVATIONS

A program to evaluate abandoned USTs at Birmingham's AANG facility included identifying abandoned tank locations, sampling tank contents, preparing tank removal plans and specifications, removing tanks and contaminated soil, and evaluating investigation-derived wastes after the removal effort was complete.

The tanks were removed during January 1991. Soil samples were taken from the bottom one-third of the excavation at the UST 130 site from each of the four side walls, the pit bottom, and the spoil pile generated during the process. Field screening tests (headspace readings) were conducted with a photoionization detector, manufactured by HNu systems, to indicate contamination and estimate the extent of total petroleum hydrocarbon (TPH) present in the soil. Soil samples were placed in glass jars and covered with foil to create a headspace in the top half of the jar. The HNu probe was inserted through the foil cover into the headspace above the soil approximately 5 minutes after sampling to indicate if TPH was present in the soil sample. When excessive readings were obtained with the HNu, additional excavation was conducted if possible. These soils were removed from the open pit and placed in the spoil pile on the AANG facility grounds.

Analytical samples were collected from the same locations as the field screening samples within the pit once all excavation was complete. These laboratory soil samples were analyzed for TPH (EPA Method 418.1), total lead (EPA Method 7421), and ignitability (EPA Method 846[1CJ]).

UST 130 appeared to be in good condition upon removal, although it had one hole on the northern side of the western end. Only a small amount of odor was detected during the UST excavation. Soils from the southern edge of the excavation directly adjacent to the tank were not removed to avoid possible foundation problems with an adjacent building.



HNu HEADSPACE READING	
LOCATION	(ppm)
130-N	4
130-S	28
130-E	3
130-W	4
130-B	44
130-SP	30

FIGURE 3
UST 130 SITE MAP
Alabama Air National Guard, Birmingham, Alabama



The soil in the UST 130 pit was found to be a reddish clay with mixed stone. Eighteen inches of crushed aggregate were overlying the clay materials with an asphalt pavement at the surface. The moisture content in the soils increased with depth, but the static water table is believed to be at or near the base of the pit (8.5 feet).

Field screening tests (headspace readings) for the soils remaining in the excavation did not indicate large amounts of soil contamination, and the excavation was backfilled. No soil was removed from the excavation for offsite disposal.

Alabama Department of Environmental Management (ADEM) guidance for remediation of soils at UST sites listed in the SI work plan was 100 parts per million (ppm) TPH for soil samples.

Total lead concentrations of 5mg/kg also were considered a remedial action criteria. If total lead concentrations are below 5 mg/kg, then no action is required. If the total lead concentrations are higher than the 5 mg/kg limit, then a toxicity characteristic leachate procedure (TCLP) lead analysis is required to determine if the soils need to be managed as a hazardous waste.

ADEM criteria led to the following soil disposition criteria:

- Visually stained soil was removed to the soil staging area for remediation by aeration.
- Soils containing less than 5 mg/kg lead and less than 100 ppm TPH (analytically) were used as general fill material on the AANG grounds.
- Soils containing more than 100 ppm TPH were aerated onsite in aeration beds until TPH levels were below the 100 ppm TPH limit.

Laboratory analyses indicate that the soil contains detectable levels of fuel component organic compounds. Table 2.1 shows the results of the TPH analyses conducted at the laboratory.

In addition to the TPH analyses, the pit bottom sample was analyzed for total lead. Analyses showed a lead concentration of 16.4 mg/kg. A subsequent analysis for TCLP lead resulted in a value of 9 $\mu\text{g}/\text{L}$. Also, the spoil pile was analyzed for ignitability and was found to be non-ignitable.

Soils that had TPH concentrations greater than the 100 ppm TPH limit and that were excavated are being remediated by aeration. TCLP lead levels are below Resource Conservation and Recovery Act (RCRA) regulatory limits for management as a hazardous waste. Thus, once soils are remediated they will be used as general fill on the AANG property.

Table 2.1. Total Petroleum Hydrocarbons -UST 130 Pit

Soil Sample Location	TPH Concentration (ppm)
UST North Wall	< 1.9
UST North Wall Duplicate	< 2.0
UST South Wall	335
UST East Wall	2.9
UST West Wall	73
UST Pit Bottom	130
UST Spoil Pile	1270

Laboratory analyses show that the soils remaining at the UST 130 site contain detectable levels of fuel component organic compounds. The compounds detected at the site are approximately 6 to 10 feet below the ground surface and do not present an exposure risk at ground surface unless excavated and exposed.

On the basis of a well and spring inventory conducted during the site investigation, potential groundwater receptors are more than 1 mile from the AANG UST 130 site.

3. CONTROL MEASURES

Control measures are addressed in this section of the Decision Document to consider the potential for adverse effects that could be caused by contaminants remaining at the UST 130 site.

3.1 SCREENING

Potential control measures used to manage the UST 130 site were screened to develop a technically feasible and reliable solution about the status of the former UST 130 site. The following criteria were used to identify and screen potential control measures for the former tank site:

- Known characteristics of the UST 130 site
- ADEM remedial criteria
- Technical feasibility of the control measure to safeguard human health and the environment

3.2 IDENTIFICATION

The following control measures were identified as possible alternatives using the screening criteria to meet the objectives of the IRP:

- Recommend groundwater monitoring
- Recommend remedial investigation (RI)
- No further action required (NFAR)

3.3 EVALUATION

The soils removed at the UST 130 site contained TPH levels showing that fuel components were a direct result of materials contained in UST 130 or by actions involving the operation of UST 130. The majority of the soils remaining in the former UST 130 location indicate that a minor amount of petroleum-contaminated media exists (see Table 2.1). A soil sample analyzed for total lead yielded a concentration of 16.4 mg/kg. A subsequent analysis for TCLP resulted on a value of 9 $\mu\text{g/l}$.

On the basis of a review of the data, discussions with ADEM, the limited mobility of contamination in fine-grained soils, and the fact that groundwater receptors are more than 1 mile away, groundwater monitoring is not currently recommended. A remedial investigation is not warranted because the data do not indicate that contamination requiring remedial action exists.

Upon review of the UST Closure Assessment Report, ADEM issued a letter stating that no further investigative or corrective action will be required by the agency at this site. This correspondence is included in the Appendix.

4. CONCLUSIONS

Past operations at the UST 130 site led to this investigation because of possible soil and water contamination. Analytical results from soil samples obtained during this investigation indicate that the soil contains fuel component organic compounds. Soils found within the excavation pit were found to have TPH concentrations greater than ADEM's criteria of 100 ppm. TCLP lead levels are below RCRA regulatory limits for management as a hazardous waste.

On the basis of recommendations from ADEM and the limited exposure risk, it is recommended that this site be removed from further IRP activities and that no further action be taken.

Signature: _____ Date: _____

DAVID C. VAN GASBECK
Chief, Environmental Division
Air National Guard Readiness Center

Signature: _____ Date: _____

Alabama Department of Environmental Management

Appendix
ADEM Response to Closure Assessment Report



**ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

Leigh Pegues, Director

Guy Hunt
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October 11, 1991

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Dear Colonel Copeland:

RE: Birmingham MAP (ANG) 117th Recon., UST 130, East Lake Boulevard,
Birmingham, Jefferson County, Alabama
NOT REGISTERED

The Department has reviewed the underground storage tank closure assessment for the referenced site. As a result of this review it is determined that no further investigative or corrective actions will be required for this site at this time.

Please use a complete reference line in all future correspondence, including Facility Identification Number, name, address, and Incident Number (UST - -), where applicable. Sites that are not registered will not have an Identification Number and should be labeled (NOT REGISTERED). Because our filing system is dependent on the use of the Facility Identification Number, we may have to return correspondence and reports that do not provide this information.

If there are any questions, please contact me at 205/270-5642.

Sincerely,

A handwritten signature in black ink that reads "David M. Lovoy".

David M. Lovoy
Hydrogeologist
Groundwater Branch
Water Division

DML/kmh

